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Himalayan Muscidae

III. The genus *Pogonomyia* Rondani

(Diptera)

By Adrian C. Pont

Department of Entomology, British Museum (Natural History), London

Abstract

The Himalayan species of *Pogonomyia* are revised. 11 species are discussed of which 7 are new species: *P. lamellitarsis* (Nepal), *P. magnifica* (Tibet), *P. beelzebub* (Nepal, Tibet, Kashmir, East Punjab, Sikkim), *P. atrifrontata* (Nepal), *P. nigrifrons* (Nepal), *P. altica* (Tibet) and *P. tysoni* (Nepal).

Introduction

This is the third in a series of papers on the taxonomy and faunistics of Himalayan Muscidae, and completes the treatment of the Hydrotaeini begun in the preceding paper (PONT, 1975) by offering a revision of the Himalayan species of *Pogonomyia* Rondani, 1871.

The genus can be identified using the generic keys of HENNIG (1955-1964) and EMDEN (1965). It can be distinguished from other Himalayan genera by the narrow tongue-like lower squama (of the „*Phaonia*-type“), series of several setae on pd surface of hind tibia, bare postero-apical margin to hind coxa, and projecting mouth-edge with elongate proboscis (figs. 11 and 21). In addition, the Himalayan species have bare pteropleuron and hypopleuron, bare to short-plumose arista, mid tibia usually with av and pv setae, and black halteres. Most species are very dark in body and wing colour and are abundantly setose, conditions that are regarded as adaptations to life at high altitudes in most Diptera (LINDNER and MANNHEIMS, 1956; LINDNER, 1973). Indeed, one of the species described below is the most remarkably setose species I have ever seen, and many of the setae on head, body and legs are expanded, flattened and lanceolate (see p. and figs. 10-11).

The genus is essentially boreo-montane in distribution throughout the Holarctic region. The four European species are known from the mountainous areas of Central Europe and from the northern tundra. They are very characteristic species of the meadows at and just above the tree-line, also extending into tundra zones and on to periglacial moraines. Palaearctic Asia contains 13 described species of which 6 are from East Tibet (STEIN, 1907; HENNIG, 1962). I have seen a great many undescribed species from the high moun-

tains of the U.S.S.R. (Pamirs, Tien-Shan) and also from Mongolia (Dr. Z. Kaszáb's expeditions), and there are clearly more to be found in the Himalayas. The Nearctic region is also rather underworked but rich in species: the described species are listed by HUCKETT (in STONE et al., 1965) and have been worked up by MALLOCH (1918) and HUCKETT (1965, 1975). A single species, *P. fumipennis* Malloch, was previously known from the Himalayas, from Kashmir.

The material discussed in this paper is located in the following Museums, and the abbreviations given in parentheses are those used in the lists of material examined: British Museum (Natural History), London (BMNH); California Academy of Sciences, San Francisco (CAS); Canadian National Collection, Ottawa (CNC); Institut für Zoologie der Universität, Innsbruck (IZU); Staatliches Museum für Naturkunde, Stuttgart (SMN); United States National Museum, Washington (USNM); Zoologische Staatssammlung, Munich (ZSM). For the generous loan of material in their care I am grateful to Drs. P. H. Arnaud, H. Janetschek, F. Köhlhorn, G. Morge and J. R. Vockeroth.

Key to males of Himalayan *Pogonomyia*

1. Frons broad, eyes separated by about the width of an eye (fig. 20). (Hind tibia with a weak apical ventral projection (fig. 22). Parafacialia at middle less than width of 3rd antennal segment (fig. 21). Mid femur bare ventrally on basal half, 3rd quarter with long av and pv setae, the pv over twice femoral depth.) *P. altica* nov. spec.
- Frons narrow, never more than twice width of 3rd antennal segment (fig. 10) 2
2. Mid metatarsus with a row of strong erect p setulae (fig. 8). Fore tarsus very short, metatarsus without ventral hairs (fig. 7). (4 post dc. Squamae dull creamy, with brown margins. Hind tibia with a strong apical ventral projection (fig. 9). Parafacialia at middle much broader than width of 3rd antennal segment.) *P. magnifica* nov. spec.
- Mid metatarsus normal, short-haired. Fore tarsus normal, metatarsus often short-haired (figs. 1, 12) 3
3. Squamae white to creamy 4
- Squamae brown to black 6
4. Pra absent. Arista virtually bare. Mid tibia without ad setae. Eyes with distinct though sparse hairs. 4 post dc. Fore metatarsus (fig. 1) with several fine erect pv setulae near tip. Mid femur with virtually no av or pv setae, with some long a setae in basal half. Hind femur without pv setae. *P. lamellitarsis* nov. spec.
- Pra present and strong. Arista at least short-haired. Mid tibia usually with ad setae. Eyes virtually bare. 3 post dc. Fore metatarsus bare. Mid femur with complete rows of uniform fine av and pv setae. Hind femur with pv setae 5
5. Arista long-pubescent, the individual hairs a little longer than arisal depth. Sternite 1 bare. Frons at narrowest point equal to diameter of anterior ocellus. Humeral dusting light-grey. Abdomen when viewed from behind, densely grey dusted except along mid-line. Wings weakly smoky. *P. tysoni* nov. spec.
- Arista plumose, the combined dorsal and ventral plumes equal to width of 3rd antennal segment. Sternite 1 setulose. Frons and narrowest point equal to width of 3rd antennal segment. Humeral dusting brown. Abdomen when viewed from behind, with a little brownish-grey dust confined to sides. Wings very smoky *P. fumipennis* Malloch

6. Pra absent. Sternite 1 bare. Proboscis longer, the mentum almost as long as length of fore tibia. Fore metatarsus with a number of soft ventral setulae (fig. 12). Hind femur without pv setae except at extreme tip. Mid femur rather curved; av surface more or less bare on median third, with several very long setae on apical third (fig. 13). Body with numerous flattened setae. Hind tibia with a conspicuous apical ventral projection (fig. 14).

P. beelzebub nov. spec.

– Pra present and well-developed. Sternite 1 setulose. Proboscis very short, mentum much shorter than length of fore tibia. Fore metatarsus without soft ventral setulae. Hind femur with long pv setae on at least basal half. Mid femur straight; with a dense row of rather even av setae. Body with few if any flattened setae. Hind tibia with the apical ventral projection vestigial 7

7. Hind tibia with short setae on av and pv surfaces, not or hardly exceeding tibial depth. Hind femur with the av and pv setae shorter and sparser, the longest pv equal to femoral depth. Mid femur with the av and pv setae shorter and sparser, the longest ones slightly longer than femoral depth.

P. atrifrontata nov. spec.

– Hind tibia with long erect av and pv setae on just over median third, the longest of which are 2–3 times tibial depth. Hind femur with the av and pv setae longer and denser, the longest pv almost twice femoral depth. Mid femur with the av and pv setae longer and finer, the longest ones twice femoral depth.

P. nigrifrons nov. spec.

Key to females of Himalayan *Pogonomyia* (where known)

1. 4 post dc 2
 – 3 post dc 3
 2. Squamae white. Mid tibia without av setae. Pra at most half length of 2nd npl. Proboscis short, mentum only half length of fore tibia. Fore tarsus of normal length and width, without ventral pubescence.

P. lamellitarsis nov. spec.

– Squamae brown. Mid tibia with several av setae. Pra at least as long as 2nd npl. Proboscis long, mentum almost as long as fore tibia. Fore tarsus short and rather compressed, with short dense ventral pubescence

sp. A

3. Squamae dark brown. Proboscis short, the mentum only half length of fore tibia. Body matt black, with virtually no dust.

P. nigrifrons nov. spec.

– Squamae yellow to white. Proboscis much longer. Body dusted or shining, not matt black 4

4. Margins of squamae deep yellow. Pra absent. Posterior mspl row pluriserial and dense. Fore metatarsus short, the ventral setulae much longer than metatarsal depth (fig. 15). Fore tibia with several pv setae.

P. beelzebub nov. spec.

– Margins of squamae creamy to white. Pra at least as long as 2nd npl. Posterior mspl row uniserial. Fore metatarsus of normal length, the ventral setulae shorter than its depth. Fore tibia with only 1 pv seta 5

5. Mid tibia with several av setae. Hind tibia with a strong pv apical seta. Costal spine long. Arista virtually bare. Mid femur with long pv setae. Parafacialia much broader than width of 3rd antennal segment.

?tibetana Schnabl

- Mid tibia without av setae. Hind tibia without a pv apical seta. Costal spine short. Arista long-pubescent. Mid femur with short pv setae. Parafacialia only as broad as width of 3rd antennal segment

sp. B

Pogonomyia lamellitarsis nov. spec. (Figs. 1-6)

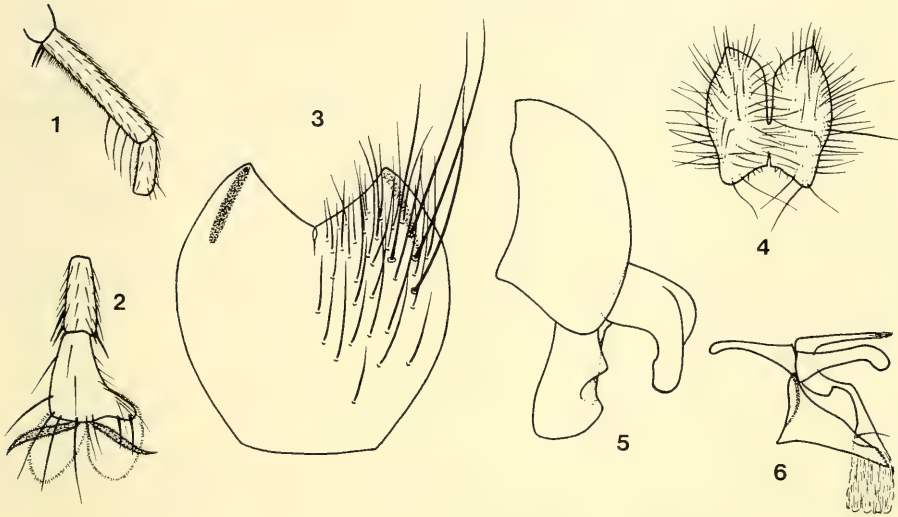
Male

Head. – Frons narrow, at middle equal to half width of 3rd antennal segment, twice diameter of anterior ocellus. Eyes with conspicuous but sparse hairs, the longest of which equal diameter of anterior ocellus. Parafrontalia brown pruinose, parafacialia silvery-white, face, genae, post-occipital dilation and lower occiput brownish-grey to grey. Interfrontalia distinct throughout. Ori numerous, 16-19 inclinate pairs extending from lunula to level of anterior ocellus; ors absent. 3rd antennal segment moderate, $1\frac{1}{2}$ times as long as 2nd segment and $1\frac{1}{2}$ times as long as broad. Arista virtually bare, the longest hairs shorter than its basal diameter. Parafacialia moderate, opposite insertion of arista equal to width of 3rd antennal segment. Genae moderate, as broad as length of 3rd antennal segment. Peristomal setae long and dense, especially anteriorly, the vibrissa not distinct from the numerous long setae in this area; anterior part of post-occipital dilation with many upcurved setae. Proboscis rather short, mentum thinly dusted.

Thorax. – Ground-colour black. Mesonotum largely matt or subshining black, in posterior view with some brownish-grey dust as follows: a pair of slender dc vittae, beginning at neck, and a median acr vitta beginning just after suture, all three merging into a broad prsc patch just after 3rd dc; humeri and notopleura dusted, and a narrow fascia of dust present along suture from notopleuron to dc. Scutellum matt or subshining in posterior view. Pleura very thinly greyish dusted. Spiracles black. Setae and setulae normal, not flattened; ground-setulae fine but sparse. Acr 0+1, the prst setulae in 4 rows, the outer rows closer to each other than to the dc. Dc 2+4. 2 h. 2 ph. 2 ia. Pra absent, represented only by a ground-setula. Prosternum, propleural depression, pteropleuron, hypopleuron, and scutellum on sides and below bare. Prostigmatal area, mesopleuron and sternopleuron densely setulose. No distinct auxiliary prostigmatal seta. Mesopleuron without a distinct setula in upper anterior corner. Disc of notopleuron setulose, the longest setulae one-third as long as the setae. Stpl 1+1, without a lower seta clearly differentiated from the adjacent ground-setulae. Scutellum with strong sub-basal lateral and apical setae; disc entirely setulose, more thinly basally.

Legs. – Black. Fore tarsus rather modified; inner and outer claws subequal. Fore coxa with short dense hairs at inner tip, otherwise coxae and trochanters without modifications. Fore femur without av setae. Fore tibia with 2 pv setae in apical half; 1 pv, 1 pd and 2 d preapical setae. Fore metatarsus (fig. 1) with a short basal ventral seta and 4-5 fine erect setulae on apical third of pv surface; 5th segment (fig. 2) expanded into a broad hook at tip of anterior surface. Mid femur straight; av surface bare except for 2-4 very short setae near middle, not half femoral depth; pv surface without setae, but the ground-setulae

comparatively long and dense; a surface with a number of strong almost decumbent setae in 2-3 rows on basal half. Mid tibia without ad or av setae; 4-6 pd and 2 pv setae. Hind femur without pv setae, but with several rows of dense fine p setae on basal third; with a complete row of av setae, those in basal half short and more a in position, those before apex longer than femoral depth. Hind tibia without an apical ventral projection; with 3-4 pd setae basad of the calcar; ad surface with a row of setae, several of which are quite strong; 3-4 short pv and 3-4 av; 1 short av apical but no pv. Hind metatarsus with 2 short basal ventral setae.



Figs. 1-6: *Pogonomyia lamellitarsis* nov. spec. Fig. 1: male fore metatarsus, posterodorsal view. – Fig. 2: male fore tarsus segments 4-5, dorsal view. – Fig. 3: male 5th sternite. – Fig. 4: male cercal plate. – Fig. 5: male hypopygium, lateral view (setae omitted). – Fig. 6: male aedeagus, lateral view. – Fig. 1 of holotype, figs. 2-6 of a paratype from Gosainkunde, 27.VI.1967.

Wings. – Rather smoky, strongly so towards base. Veins bare except for costa. Costal spine inconspicuous, hardly distinct from the costal spinules; spinules all short. Cross-vein m-m almost straight. Squamae white, border of lower one yellow. Knob of halteres black.

Abdomen. – Black in ground-colour. Each tergite subshining or matt black medially, grey dusted laterally; the dark area very extensive on tergite 1+2, decreasing in extent towards tip of abdomen and occupying only median third on tergite 5. Setae long and dense laterally and posteriorly, none of them flattened; disc of tergites sparsely setose, except for marginal rows. Sternites without any special setae, sternite 1 bare. Pregenital tergite with long dense setae. Genitalia as in figs. 3-6. Praegenites straight, not diverging from the longitudinal axis of the aedeagus.

Measurements. – Length of body, 6.5-7.0mm. Length of wing, 5.5-6.0mm.

Female

Differs from the male as follows:

Head. – Frons broad, at middle as broad as an eye. Parafrontalia brown pruinose, matt dark brown from some points-of-view; parafacialia with a large matt patch opposite base of antennae. Interfrontalia dark, at middle 4 times as broad as a parafrontale; with a pair of crossed setae. 7-8 pairs of inclinate ori on lower $\frac{2}{3}$ of frons; above these with 2 pairs of reclinate ors and outside them with 2-3 pairs of outcurved to proclinate ors. Parafacialia rather broader, opposite insertion of arista broader than width of 3rd antennal segment.

Thorax. – Mesonotum dusted as in male, but the dusting of the dc vittae and on humeri and notopleura tending to be tinged with bluish. Pleural setulae shorter and sparser. Notopleural setulae very short.

Legs. – Coxae and trochanters without modifications. Fore tibia with 1 long and usually 1 short pv seta. Fore tarsus not short or compressed, without special setulae. Mid femur, in basal half, with a few fine av and pv setae, as long as femoral depth. Mid tibia with (2-) 3 ad setae, but no av setae. Hind femur without any p setae, with 1-2 fine pv near base; av row strictly av, the setae in basal half fine. Hind tibia without pv setae.

Wings. – Not as smoky as in male.

Abdomen. – Dusted as in male, but lateral dusting much denser and greyer, even tinged with yellow and blue, and the dark area less extensive and conspicuous. Setae reduced and sparse.

Measurements. – Length of body, 5.5-6.5 mm. Length of wing, 5.0-6.0 mm.

Holotype ♂, Nepal: Gosainkunde, 4900 m, 27. VI. 1967 (Canadian Nepal Expedition), in CNC.

Paratypes, 3♂, 11♀. Nepal: Gosainkunde, 4900 m, 27. VI. 1967 (Canadian Nepal Expedition), 1♂, 6♀, in CNC, & 1♂, 3♀, in BMNH; 28°00' N, 85°00' E, Malaise trap 6, 3500 m, 26. V.-2. VI. 1967 (Canadian Nepal Expedition), 1♂, 2♀, in CNC.

The male of *P. lamellitarsis* can be easily distinguished from other species of *Pogonomyia* by the expanded 5th segment of fore tarsus (fig. 2) and the pv setulae on fore metatarsus (fig. 1), the absence of ad and av setae on mid tibia, and the absence of pra. The female can be recognised by 4 post dc and very short pra.

Pogonomyia magnifica nov. spec. (Figs. 7-9)

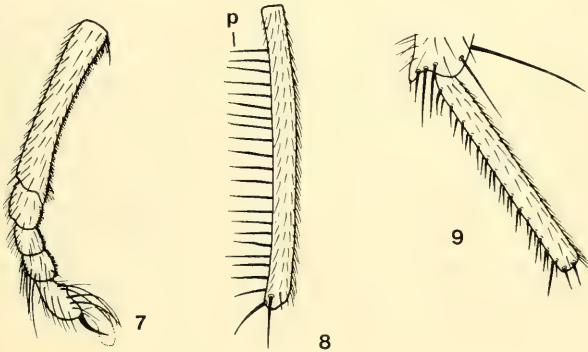
Male

Head – [Rather immature and shrivelled.] Densely setose. Frons narrow, at middle probably as broad as or slightly broader than width of 3rd antennal segment. Eyes virtually bare, with a very sparse short pubescence. Parafrontalia, parafacialia, face and genae brownish-grey pruinose, post-occipital dilation and upper occiput subshining, lower occiput grey. Interfrontalia not visible, due to shrinkage. Ori very numerous, extending in a double row from lunula to vertex, the lower ones inclinate, many of the upper ones directed outwards or forwards. 3rd antennal segment short, a little longer than 2nd and not much longer than broad. Arista appearing absolutely bare. Parafacialia broad, opposite insertion of arista almost twice width of 3rd antennal segment. Genae broad, twice as

broad as length of 3rd antennal segment. Peristomal setae extremely long and dense, from back of head to vibrissal angle, the vibrissae not distinct from the numerous long setae in this area; anterior half of post-occipital dilation with numerous dense upcurved setae. Proboscis long and thin, mentum thinly dusted.

Thorax. – Ground-colour black, mesonotum appearing matt when viewed from above; in posterior view also appearing matt to subshining, but without any trace of definite dust or of any pattern. Scutellum matt to subshining. Pleura mostly subshining. Spiracles black. Setae and setulae normal, not flattened; the setae long and thin, the ground-setulae long and dense on mesonotum but extremely dense on pleura. Acr 0+1, the prst setulae in 4 rows, the outer rows as close to each other as to the dc. Dc 2+4. 2-3 h. 2 ph. 2 ia. Pra longer than 2nd npl. Prosternum, propleural depression, pteropleuron, hypopleuron, and scutellum on sides and below bare. Prostigmatal area, mesopleuron and sternopleuron with long dense setulae many of which are crinkly at tips. No distinct auxiliary prostigmatal seta. Mesopleuron without a distinct setula in upper anterior corner. Disc of notopleuron setulose, the longest setulae half as long as the setae. Stpl 1+2, the lower seta well-developed and clearly differentiated from the ground-setulae, the anterior seta weak. Scutellum with 4 pairs of lateral setae, including the sub-basal, and 1 apical pair; disc long-setulose, thinly so medially.

Legs. – [Rather immature and shrivelled.] Black. Tarsi considerably modified; inner and outer claws subequal. Coxae and trochanters without modifications, though posterior ones densely setulose. Fore femur without av setae. Fore tibia with a row of fine p se-



Figs. 7-9: *Pogonomyia magnifica* nov. spec. Fig. 7: male fore tarsus, posterior view. – Fig. 8: male mid metatarsus, dorsal view. p: row of posterior setulae. – Fig. 9: tip of male hind tibia with hind metatarsus, anterior view. – Figs. 7-9 of holotype.

tae and, in apical half, of pv setae; with d, pd and pv preapical setae. Fore tarsus (fig. 7) with a ventral prolongation at tip of segment 1, segments 2-4 short and compressed, segment 5 with a small ventral boss; metatarsus with a short basal ventral seta, segment 4 with short d setae, and segment 5 with short pv setae. Mid femur straight; a few fine ventral setulae near base; av surface bare except for 7-8 strong setae on apical third, the longest of which is twice femoral depth; pv surface with a row of setae subequal to femoral depth, in apical quarter these becoming rather longer and in more than one row. Mid tibia with complete rows of ad and pd setae, and in apical half with rows of p and pv setae; without

av setae. Mid metatarsus (fig. 8) with a row of long stiff erect p setulae. Hind femur, like mid femur, with a few ventral setulae near base; without pv setae; av surface with a row of setae in apical third, slightly longer than femoral depth. Hind tibia rather curved, with a distinct apical ventral projection (fig. 9) on which there are short av and pv apical setae (in addition to strong a and p setae that are on the tibia rather than on the spur); a row of short pd setae, without a strong calcar; p to pv surfaces with several rows of setae, mostly at right-angles to the tibial axis, those on p surface the longest and up to one-third of tibial length; ad surface with a complete row of setae; a to v surfaces with several rows of fine dense setae and setulae. Hind metatarsus (fig. 9) with short stout av and pv setulae, and a basal ventral setula.

Wings. – Weakly smoky, more conspicuously so towards base. Veins bare except for costa. Costal spine inconspicuous, hardly distinct from the costal spinules; spinules all short. Cross-vein m-m weakly sinuous. Squamae dull creamy, the borders brown. Knob of halteres dark brown.

Abdomen. – Black in ground-colour; shining from all points-of-view and without any dusting or pattern. Setae long and erect, none of them flattened. Tergites densely setose, tergite 5 especially densely setose laterally and posteriorly. Sternites without any special setae, sternite 1 bare. Pre genital tergite with long dense setae. [Genitalia not examined.]

Measurements. – Length of body, 8.0mm. Length of wing, 7.0mm.

Female not known.

Holotype ♂, Tibet: Lamna La, 5600m, 17.VI.1924 (R. W. G. Hingston), in BMNH.

The male of *P. magnifica* can be distinguished from other species of *Pogonomyia* by the spinose mid metatarsus (fig. 8), strong hind tibial apical projection (fig. 9), and details of mid and hind femoral chaetotaxy.

It resembles *P. aculeata* Stein from Tibet because of the strong apical ventral projection on hind tibia, but differs by having a row of strong p setulae on mid metatarsus (fig. 8), no av setae in basal half of mid femur, and no pv setae or basal av setae on hind femur. *P. metatarsata* Stein from Tibet also has strong setulae on mid and hind metatarsi, but has long curly hairs on the basal half of mid femur and is densely setose along all the ventral surfaces of hind femur.

Pogonomyia sp. A

A single female with 4 post dc, that differs from that of *P. lamellitarsis* nov. spec. as stated in the key and differs from the male of *P. magnifica* nov. spec. by the dark squamae and presence of av setae on mid tibia. It is in poor condition, having been rather squashed, and apparently belongs to a further species of which no males are known as yet.

East Nepal: south of Makalu, 5200m feet, 20.V.1954 (L. Swan), 1♀, in CAS.

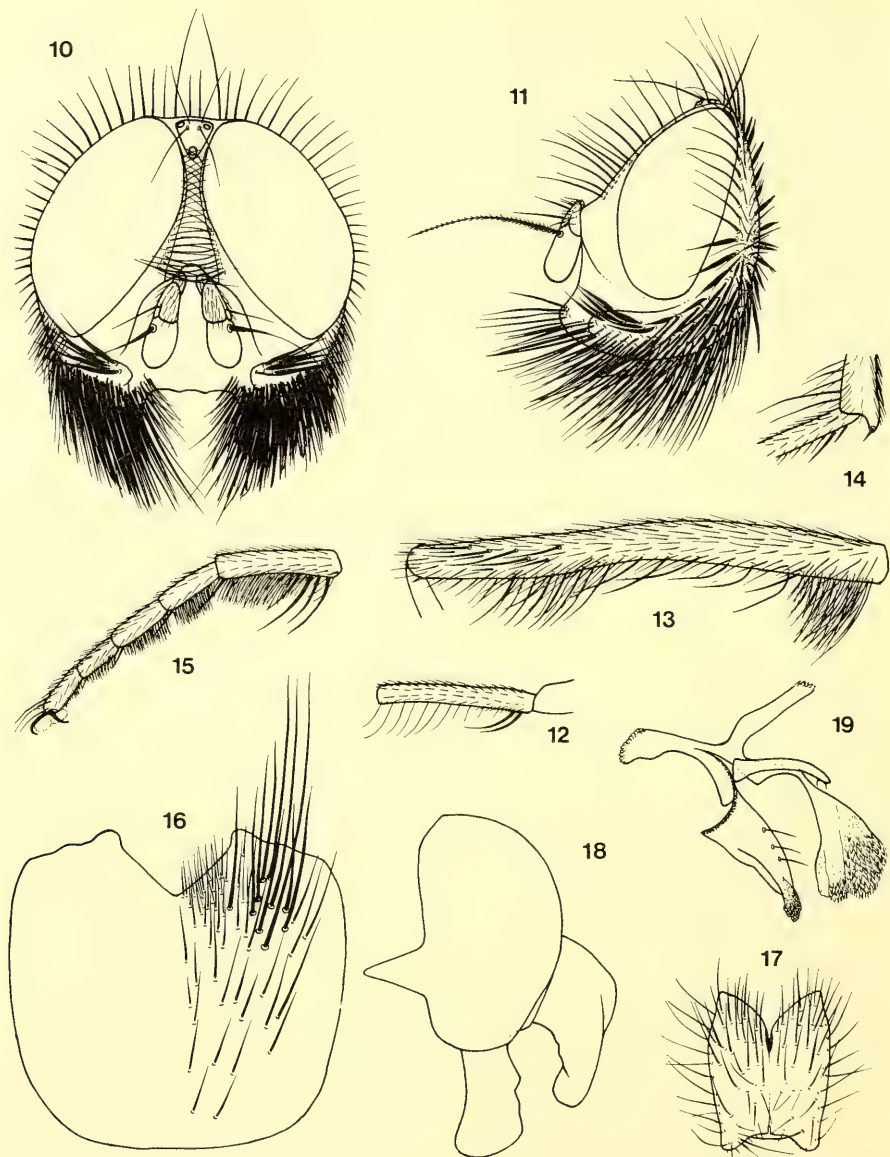
Pogonomyia beelzebub nov. spec. (Figs. 10-19)

Male

Head (figs. 10-11).—Frons narrow, at middle equal to just over diameter of anterior ocellus, not half width of 3rd antennal segment. Eyes virtually bare. Parafrontalia, parafacialia, genae and lower occiput black, thinly brown or brownish-grey pruinose from some points-of-view; face more obviously brownish-grey pruinose, upper occiput matt black. Interfrontalia mostly distinct, at narrowest point (in upper half) visible only as a seam where parafrontalia touch. 15-21 pairs of ori, extending from lunula almost to level of anterior ocellus; ors absent. 3rd antennal segment moderate, only a little longer than 2nd segment and hardly $1\frac{1}{2}$ times as long as broad. Arista short-pubescent, the longest hairs equal to basal diameter of arista. Parafacialia moderate, opposite insertion of arista slightly broader than width of 3rd antennal segment. Genae moderate, as broad as length of 3rd antennal segment. Setae around vibrissal angle, along peristoma and on lower occiput exceptionally dense, the majority of them flattened, presenting a very bushy appearance (fig. 10); vibrissae not distinct from the setae in this area; anterior part of post-occipital dilation with several upcurved flattened setae. Proboscis long and slender, mentum densely greyish-brown dusted.

Thorax.—Ground-colour black. Mesonotum dull, matt, without dust in posterior view except for brownish-grey dust on humeri and, more thinly, over post-alar calli. Scutellum matt black. Pleura very thinly brownish-grey dusted. Spiracles black. Setae and setulae mostly normal, the ground-setulae fine but sparse; but on mesopleuron, notopleuron and humeri the setae and setulae very long, dense and flattened, presenting a very bushy appearance. Acr 0+1, the prst setulae irregularly 3- to 4-serial, the outer rows slightly closer to each other than to the dc. Dc 2+3. 2h. 2ph. 2ia. Pra absent. Prosternum, propleural depression, pteropleuron, hypopleuron, and scutellum on sides and below bare. No distinct auxiliary prostigmatal seta. Mesopleuron densely setose on all but lower anterior quarter. Longest npl setulae $\frac{3}{4}$ length of setae. Stpl 1+1, the anterior seta and most of the setulae flattened; lower anterior margin with bushy setae. Scutellum with strong lateral and apical setae; disc with fine setulae, with a small bare median patch towards base.

Legs.—Black. Tarsi without modifications; inner and outer claws subequal, those on fore leg subequal to those on the other two pairs. Coxae and trochanters without modifications, the fore coxa with long flattened setae anteriorly. Fore femur with several short av setae on basal half; p to pv surfaces with numerous rows of long dense flattened setae; pd row also consisting of flattened setae. Fore tibia with 3-4 pv in apical half and, below them, with a row of erect setulae; with d, ad, 2 av and 2 pv preapical setae. Fore metatarsus (fig. 12) with a basal ventral seta and a row of fine ventral setulae in apical half or on most of length, these sometimes extending on to 2nd segment. Mid femur slightly curved (fig. 13), with a weak ventral swelling in apical quarter; av to pv surfaces with a dense group of short curled setae at base, slightly longer than femoral depth; pv surface with a row of setae, the longest at least twice femoral depth, culminating in a loose pluriserial tuft on apical quarter (fig. 13); av surface bare after the basal group, apical third with a group of close-set setae, twice femoral depth, and a surface on apical $\frac{2}{3}$ with a row of setae; most d to a setae and setulae flattened. Mid tibia with 0 ad, 4-5 pd, 0 av and 4-5 short pv setae (a few ♂♂ from Gosainkunde with 1-2 ad and a short av). Hind femur with a



Figs. 10–19: *Pogonomyia beelzebub* nov. spec. Fig. 10: male head, frontal view. – Fig. 11: male head, lateral view. – Fig. 12: male fore metatarsus, posterior view. – Fig. 13: male mid femur, anterior view. – Fig. 14: tip of male hind tibia with part of hind metatarsus, anterior view. – Fig. 15: female fore tarsus, posterior view. – Fig. 16: male 5th sternite. – Fig. 17: male cercal plate. – Fig. 18: male hypopygium (lateral view), (setae omitted). – Fig. 19: male aedeagus, lateral view. – Figs. 10–12 and 14 of holotype, figs. 13 and 16–19 of a paratype from Punjab, Kangra district, Kulu, 16.VII.1952, fig. 15 of a paratype from Gosainkunde, 27.VI.1967.

complete row of av setae, those in basal half rather a of av, the longest (at apical third) almost twice femoral depth; pv surface bare, but a few short setae present on apical quarter and some dense fine p setulae in basal quarter; all setae from a to d surfaces dense and flattened. Hind tibia weakly curved, with a strong apical ventral projection on which is situated a very short av apical setula (fig. 14); ground-setulae rather long and dense from pd through d to av surfaces; pd surface with 5-6 long strong setae including the calcar, interspersed with several longer setulae; ad surface with a dense row of setae; av surface without outstanding setae, with a quite dense row of longer setulae on just over median third; pv surface with about 6 fine erect setulae. Hind metatarsus with 2 short basal ventral setae.

Wings.—Strongly smoky, basal third and anterior part almost to tip of vein r2+3 black. Veins bare except for costa. Costal spine inconspicuous, hardly distinct from the spinules; spinules all short. Cross-vein m-m upright, weakly sinuous. Squamae very dark brown. Knob of halteres black.

Abdomen.—Black in ground-colour. Without any dusted pattern, and appearing matt dark brown from most points-of-view. Tergites with few setae or setulae on dorsal surface, a few long lateral marginals and/or discals present; sides of tergites 1+2 to 5 almost entirely covered with long dense semi-decumbent flattened setae. Sternite 1 bare, sternite 2 densely setose, sternites 3-5 without any special setae. Pregenital tergite with quite long setae. Genitalia as in figs. 16-19.

Measurements.—Length of body, 5.0–7.0mm. Length of wing, 4.0–6.0mm.

Female

Differs from the male as follows:

Head.—Frons broad, at middle as broad as an eye. Parafrontalia, parafacialia, genae and occiput more densely brown pruinose. Parafacialia usually without a matt patch opposite base of antennae. Interfrontalia dark, at middle of frons 3 times as broad as a parafrontale; with a pair of crossed setae. 4-6 pairs of inclinate ori on lower half of frons; above them with 3 pairs of strong ors, directed backwards and outwards (upper), outwards (median), and forwards and outwards (lower). Parafacialia broader, opposite insertion of arista much broader than width of 3rd antennal segment. Peristomal, genal and vibrissal setae less dense and bushy, none of them flattened.

Thorax.—Mesonotum brownish-grey dusted, the dust much greyer and denser over humeri and notopleura and on post-alar calli. In posterior view with thinly dusted or undusted markings as follows: a median acr vitta and 2 narrower paramedian dc vittae running from neck to suture, all three meeting at 2nd post dc and forming a large dark median patch, and the three sometimes joined at suture by a narrow undusted transverse fascia; a pair of prst patches between ph and dc; a pair of narrow post vittae running through ia. Scutellum grey dusted in posterior view except for a brown patch around each basal seta. Pleura densely grey dusted, the mesopleuron more brownish. Without any long, bushy or flattened setae and setulae. Npl setulae short, few in number. Mesopleuron with the setae of the posterior row pluriserial, in several irregular rows.

Legs.—Setae sparser, and none of them flattened. Fore metatarsus (fig. 15) short, with several curved ventral setae in basal quarter; metatarsus and the following 3 segments with soft ventral hairs, subequal to tarsal depth. Mid femur straight, with some short av setae in basal half, and 3 strong setae in apical third that are much longer than femoral depth; pv

surface with a row of setae diminishing in length from base to tip, the longest ones near base almost twice femoral depth. Mid tibia with (2-) 3 ad, 3-5 pd, 2 (-3) av and 2 (-3) pv setae, but these numbers rather variable and sometimes reduced. Hind femur with a complete av row, those near apex the longest and almost twice femoral depth; with a more or less complete row of fine pv setae, those near apex often weak, those near base the longest and much longer than femoral depth. Hind tibia straight, without a ventral apical projection and without long ground-setulae; 3-5 pd, 3-4 ad and 5-6 av setae, without pv setae or pv apical.

Wings.—Less extensively blackened, the base brown or yellow rather than smoky. Squamae yellowish, the margins deep yellow.

Abdomen.—Densely grey dusted, in posterior view this dusting rather shifting and producing a weakly shifting effect. Tergites with few long setae except at sides of tergites 4 and 5. Without the covering of dense flattened setae along sides. Sternite 2 less densely setose.

Measurements.—Length of body, 5.5-7.5 mm. Length of wing, 4.5-6.5 mm.

Holotype ♂, Nepal: Prov. Nr. 3 East, Umg. Tsola Tso, 4700-5000 m, 8.VII.1964 (W. Dierl), in ZSM.

Paratypes, 45♂, 26♀. Nepal: Prov. Nr. 3 East, Umg. Tsola Tso, 4700-5000 m, 6.VII.1964 (W. Dierl), 1♂, in BMNH; Prov. Nr. 3 East, Chukhung, 4800-5000 m, 9.VI.1964 (W. Dierl), 1♂, in ZSM; Khumbu, Lobuche, 4900 m, 9.VII.1962 (G. Ebert und H. Falkner), 2♂, in ZSM; Basislager bei Pangpoche, Lichtfang, 3900 m, 31.V.1961 (Forschungsunternehmen Nepal-Himalaya 1961), 1♂, in IZU; 28°00' N, 85°00' E, Malaise trap 6, 3500 m, 27.V.-2.VI.1967 (Canadian Nepal Expedition), 2♂, 1♀, in CNC; 28°00' N, 85°00' E, Malaise trap 6, 3500 m, 26.V.-1.VI.1967 (Canadian Nepal Expedition), 1♀, in CNC [the date on the label is probably incorrect and should read 27.V.-2.VI.1967]; Gosainkunde, 4900 m, 27.VI.1967 (Canadian Nepal Expedition), 5♂, 3♀, in BMNH, and 15♂, 7♀, in CNC; West Nepal, Silgarhi Doti, Urai Lagna, below Saipal, 3300 m, 11.VII.1953 (J. B. Tyson), 1♂, in BMNH; Baitadi, Tinkar Khola, 4200 m, 3.VII.1953 (J. B. Tyson), 6♂, 9♀, in BMNH, 1♂ in USNM, and 1♂ in SMN. Tibet: Kambu, 4800 m, 10.VI.1928 (F. M. Bailey), 1♂, in BMNH. India, Kashmir: no locality, 3600-4300 m, 1923 (F. J. Mitchell), 2♂, 3♀, in BMNH. India, East Punjab: Kangra district, Kulu, Dibibokri Nal, Runi Thach, 4200 m, 6.VII.1952 (E. A. C. L. E. Schelpe), 2♂, in BMNH; the same, with date 16.VII.1952, 3♂, 1♀, in BMNH; the same, swept from grass, evening, 8.VII.1952, 1♂; in BMNH. India, Sikkim: Teesta Valley, Tungu, 4300-4600 m, 1.-15.VII.1903 (Tibet Expedition), 1♀, in BMNH.

This is the most remarkable species of Muscid that I have seen on account of the very dense and partly flattened setae (e. g. figs. 10-11) and the very matt black undusted body colour of the male. Additional important diagnostic characters are the very black wings of the male, absence of pra, bare sternite 1 and 3 post dc.

Some specimens, such as those from Silgarhi-Doti and Kambu, have the setae rather less strikingly dense and flattened, and the ventral tuft at the base of mid femur rather shorter and thinner. There are however no other differences, and this is probably the effect of geographical variation.

Pogonomyia atrifrontata nov. spec.

Male

Head.—Frons narrow, at middle almost equal to width of 3rd antennal segment, twice diameter of anterior ocellus. Eyes with conspicuous but sparse hairs, the longest of which are not equal to diameter of anterior ocellus. Ocellar tubercle, parafrofrontalia, interfrontalia, parafacialia, genae and entire occiput jet black, matt and velvety, without any pruinosity from any point-of-view except for genae and lower occiput which are dark brown pruinose from some points-of-view; face dark brown pruinose. Interfrontalia distinct throughout. 10 pairs of quite fine ori, extending from lunula almost to level of anterior ocellus; ors absent. 3rd antennal segment moderate, $1\frac{1}{2}$ times as long as 2nd segment and $1\frac{1}{2}$ times as long as broad. Arista short pubescent, the longest hairs equal to basal diameter of arista. Parafacialia moderate, opposite insertion of arista equal to width of 3rd antennal segment. Genae moderate, as broad as length of 3rd antennal segment. Peristomal setae long and dense, especially anteriorly, the vibrissae not strikingly distinct from the numerous setae in this area; anterior part of post-occipital dilation with several upcurved flattened setae. Proboscis short, mentum densely dark brown dusted.

Thorax.—Ground-colour black. Mesonotum dull, matt, without dust in posterior view except on humeri; in dorsal view humeri and notopleura brown dusted, and very weak traces of a pair of narrow paramedian vittae from neck to 2nd post dc, a pair of prst patches between dc and ph, and a pair of narrow post vittae between dc and ia. Scutellum matt black from all points-of-view. Pleura thinly brownish-grey dusted. Spiracles black. Setae and setulae normal, not flattened; ground-setulae fine but sparse. Acr 0+1, the prst setulae in 2 rows, with an occasional setula between, the outer rows closer to each other than to the dc. Dc 2+3. 2h. 2ph. 2ia. Pra present, subequal to or longer than 2nd npl. Prosternum, propleural depression, pteropleuron, hypopleuron, and scutellum on sides and below bare. Prostigmatal area and mesopleuron densely setulose. No distinct auxiliary prostigmatal seta. Mesopleuron with a distinct setula in upper anterior corner. Disc of notopleuron setulose, the longest setulae one-third as long as the setae. Stpl 1+2, several of the ground-setulae quite long. Scutellum with strong sub-basal lateral and apical setae; disc with fine setulae only around sides, with a bare median patch.

Legs.—Black. Tarsi without modifications; inner and outer claws subequal, those on fore leg as long as those on the other two pairs. Coxae and trochanters without modifications, the coxae all rather long haired anteriorly. Fore femur without av setae. Fore tibia with 2-3 pv in apical half; with d, ad, 2 av and 2 pv preapical setae. Fore metatarsus with a basal ventral seta. Mid femur straight; av and pv surfaces with complete rows of quite dense setae, the longest of which are slightly longer than femoral depth. Mid tibia with 1 ad, 3-4 pd, 3 short av and 5-6 pv. Hind femur with a complete row of av setae, the longest setae at least twice femoral depth; v to pv surfaces with rather shorter finer dense setae on basal $\frac{3}{4}$, these equal to femoral depth. Hind tibia straight, with a vestigial apical ventral projection on which is situated an av apical seta; pd surface with 4 long setae including the calcar, interspersed with several long setulae; ad surface also with a row of 4-5 long setae with interstitial setulae; a surface with 7 short setae on just over median third, and av surface with 6-8 slightly longer setae, slightly longer than tibial depth; pv surface with about 5 short erect setulae that are not as long as tibial depth; without a pv apical. Hind metatarsus with 2 short basal ventral setae.

Wings.—Smoky, strongly darkened in basal third and along costa. Veins bare except for costa. Costal spine inconspicuous, hardly distinct from the spinules; spinules moderate, those on first section of costa much longer than costal depth. Cross-vein m-m upright, more or less straight. Squamae dark brown. Knob of halteres black.

Abdomen.—Black in ground-colour. In dorsal view appearing matt with some brown dust at sides of tergites 3-5; in posterior view appearing subshining black and without any trace of dust. Setae quite long and dense on sides of tergites and lying rather adpressed against abdomen, but none of them flattened. Sternites without any special setae, sternite 1 setulose. Pregenital tergite with quite long setae [Genitalia not examined].

Measurements.—Length of body, 5.5 mm. Length of wing, 4.5 mm.

Female not known.

Holotype ♂, Nepal: Tanga, 3900 m, 29.VII.1962 (G. Ebert und H. Falkner), in ZSM.

P. atrifrontata is most closely related to the European *P. brumalis* Rondani, but the male differs by the broader frons, jet black matt parafrofrontalia and parafacialia, very black wing-base, and setulose sternite 1.

Pogonomyia nigrifrons nov. spec.

Male

Head.—Frons narrow, at middle almost equal to width of 3rd antennal segment, twice diameter of anterior ocellus. Eyes with conspicuous but sparse hairs, the longest of which are not equal to diameter of anterior ocellus. Ocellar tubercle, parafrofrontalia, interfrontalia, parafacialia, genae and entire occiput jet black, matt and velvety, without any pruinosity from any point-of-view except for genae and lower occiput which are dark brown pruinose from some points-of-view; face dark brown pruinose. Interfrontalia distinct throughout. 9-12 pairs of quite fine ori, extending from lunula almost to level of anterior ocellus; ors absent. 3rd antennal segment moderate, $1\frac{1}{2}$ times as long as 2nd segment and $1\frac{1}{2}$ times as long as broad. Arista short pubescent, the longest hairs equal to basal diameter of arista. Parafacialia moderate, opposite insertion of arista equal to width of 3rd antennal segment. Genae moderate, as broad as length of 3rd antennal segment. Peristomal setae long and dense, especially anteriorly, the vibrissae not strikingly distinct from the numerous setae in this area; anterior part of post-occipital dilation with several upcurved flattened setae. Proboscis short, mentum densely dark brown dusted.

Thorax.—Ground-colour black. Mesonotum dull, matt, without dust in posterior view except on humeri; in dorsal view humeri and notopleura brown dusted, and very weak traces of a pair of narrow paramedian vittae from neck to 2nd post dc, a pair of prst patches between dc and ph, and a pair of narrow post vittae between dc and ia. Scutellum matt black from all points-of-view. Pleura thinly brownish-grey dusted. Spiracles black. Setae and setulae normal, not flattened; ground-setulae fine but sparse. Acr 0+1, the prst setulae in 2 rows, with an occasional setula between, the outer rows closer to each other than to the dc. Dc 2+3. 2h. 2ph. 2ia. Pra present, subequal to or longer than 2nd npl. Prosternum, propleural depression, pteropleuron, hypopleuron, and scutellum on sides and below bare. Prostigmatal area and mesopleuron densely setulose. No distinct auxiliary prostigmatal seta. Mesopleuron with a distinct setula in upper anterior corner. Disc

of notopleuron setulose, the longest setulae one-third as long as the setae. Stpl 1+2, several of the ground-setulae quite long. Scutellum with strong sub-basal lateral and apical setae; disc with fine setulae only around sides, with a bare median patch.

Legs.—Black. Tarsi without modifications; inner and outer claws subequal, those on fore leg as long as those on the other two pairs. Coxae and trochanters without modifications, the coxae all rather long haired anteriorly. Fore femur without av setae. Fore tibia with 2-3 pv in apical half; with d, ad, 2 av and 2 pv preapical setae. Fore metatarsus with a basal ventral seta. Mid femur straight; av and pv surfaces with complete rows of long fine quite dense setae, the longest of which are twice femoral depth. Mid tibia with 1 ad, 3-4 pd, 3 short av and 5-6 pv. Hind femur with a complete row of long dense av setae, the longest setae at least twice femoral depth; v to pv surfaces with rather shorter finer dense setae on basal $\frac{3}{4}$, the longest almost twice femoral depth. Hind tibia straight, with a vestigial apical ventral projection on which is situated an av apical seta; pd surface with 4 long setae including the calcar, interspersed with several long setulae; ad surface also with a row of 4-5 long setae with interstitial setulae; a to av surfaces with long setae, mainly on median third, mostly erect and the longest twice tibial depth; p to pv surfaces also with long rather dense setae on just over median third, the longest almost three times tibial depth; without a pv apical. Hind metatarsus with 2 short basal ventral setae.

Wings.—Smoky, strongly darkened in basal third and along costa. Veins bare except for costa. Costal spine inconspicuous, hardly distinct from the spinules; spinules moderate, those on first section of costa much longer than costal depth. Cross-vein m-m upright, more or less straight. Squamae dark brown. Knob of halteres black.

Abdomen.—Black in ground-colour. In dorsal view appearing matt with some brown dust at sides of tergites 3-5; in posterior view appearing subshining black and without any trace of dust. Setae quite long and dense on sides of tergites and lying rather adpressed against abdomen, but none of them flattened. Sternites without any special setae, sternite 1 setulose. Pre genital tergite with quite long setae. [Genitalia not examined.]

Measurements.—Length of body, 4.5-5.0mm. Length of wing, 3.5-4.0mm.

Female

Differs from the male as follows:

Head.—Frons broad, at middle almost as broad as an eye. Interfrontalia dark, at middle 3 times as broad as a parafrontale, with a pair of crossed setae. 4 pairs of inclinate ori on lower half of frons; 2 pairs of reclinate ors above them, and 2 pairs of proclinate ors.

Thorax.—Disc of notopleuron with 0-1 setula.

Legs.—Fore tarsus not short or compressed; with quite long ventral pubescence, the longest of which is over half tarsal depth; metatarsus with a strong basal ventral seta. Mid femur bare on av surface except for a few setae on apical third; pv surface with some quite long fine setae, confined to basal half. Mid tibia with 2 ad, 2-3 pd, 3 short av and 3-4 short pv. Hind femur with the av row complete but shorter; a row of fine pv setulae, becoming more p towards base, none as long as femoral depth. Hind tibia without a ventral apical projection; 3-4 pd above the calcar; 4-5 ad, no a, 4-5 av, no pv.

Wings.—Not so heavily darkened. Costal spinules shorter.

Abdomen.—Mostly matt dark brown in dorsal view and dark brown shining in posterior view, not matt or shining black. Setae reduced and sparse.

Measurements.—Length of body, 4.5mm. Length of wing, 4.0mm.

Holotype ♂, Nepal: Gosainkunde, 5000m, 27.VI.1967 (Canadian Nepal Expedition), in CNC.

Paratypes, 2♂, 1♀. Nepal: Gosainkunde, 5000m, 27.VI.1967 (Canadian Nepal Expedition), 1♂, 1♀, in CNC, and 1♂, in BMNH.

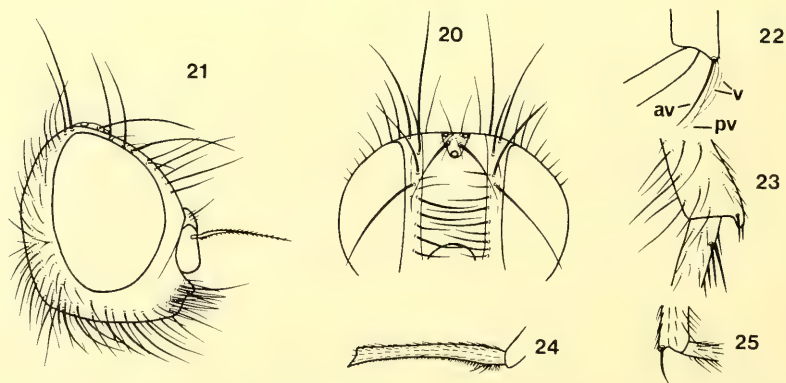
The male of *P. nigrifrons* is extremely similar to that of *P. atrifrontata*, and differs only in the leg characters given in the key (p. 123).

Pogonomyia altica nov. spec. (Figs. 20-22)

Male

Head.—Frons very broad, at middle (fig. 20) as broad as an eye. Eyes bare, with only the usual microscopic pubescence. Parafrontalia, parafacialia and genae dull brownish-grey pruinose, appearing matt from most points-of-view. Interfrontalia dark, at middle about 4 times width of a parafrontale; without crossed setae. About 7 pairs of inclinate ori; 2 reclinate and 1 proclinate ors. 3rd antennal segment short, a little longer than 2nd and not much longer than broad. Arista pubescent, the longest hairs about as long as its basal diameter. Parafacialia moderate (fig. 21), opposite arista insertion not quite as broad as width of 3rd antennal segment. Genae moderate, slightly narrower than length of 3rd antennal segment. Peristomal setae quite long and dense anteriorly (fig. 21); no strong upcurved setae on anterior part of post-occipital dilation. Proboscis rather long and thin, mentum thinly dusted.

Thorax.—Ground-colour black, mesonotum appearing matt brown when viewed from above; in posterior view appearing brown dusted, the dust very thin outside post ia but rather paler on h, along prst dc and at sides of suture. Scutellum matt brown. Pleura



Figs. 20-22: *Pogonomyia altica* nov. spec. Fig. 20: male frons, from above. — Fig. 21: male head, lateral view. — Fig. 22: tip of male hind tibia, anterior view. — Figs. 20-22 of holotype.

Fig. 23: *Pogonomyia tysoni* nov. spec. Tip of male hind tibia, anterior view. Holotype.

Figs. 24-25: *Pogonomyia fumipennis* Malloch. Fig. 24: male fore metatarsus, posterior view. — Fig. 25: tip of male hind tibia, anterior view. — Figs. 24-25 of a paratype.

thinly brown dusted, subshining from some angles. Spiracles black. Setae and setulae normal, not flattened; ground-setulae fine but sparse. Acr 0+1, prst setulae in 2 rows that are closer to each other than to dc. Dc 2+3. 2h. 2ph. 2ia. Pra longer than 2nd npl. Prosternum, propleural depression, pteropleuron, hypopleuron, and scutellum on sides and below bare. No auxiliary prostigmatal seta. Mesopleuron with a setula in upper anterior corner. Disc of notopleuron setulose, the longest setulae half as long as the setae. Stpl 1+1, with a well-developed setula below posterior seta (scar only present). Scutellum with strong sub-basal lateral and apical setae; the discal setulae confined to sides so that a broad median patch is bare.

Legs.—Black. Tarsi without modifications; inner and outer claws subequal. Coxae and trochanters without modifications. Fore femur without av setae. Fore tibia with 2 pv setae in apical half; with d, pd and 2 pv preapical setae. Fore metatarsus with a basal ventral seta. Mid femur straight; av surface bare except for 4 rather long fine setae on third quarter, longer than femoral depth, and slightly a of them with a row of strong setae on apical third of femur; pv surface with 4 long fine wavy setae, at least twice as long as femoral depth, situated on third quarter. Mid tibia with 3 ad, 3 pd, 3 av and 2 short pv. Hind femur without pv setae; av surface with a row of setae confined to apical half, rather longer than femoral depth, and rather a of this row with a number of similar irregular setae on apical $\frac{2}{3}$. Hind tibia rather curved, with a short but distinct apical ventral projection on which there is 1 av seta and also 1 pv and 2 v apical hairs (fig. 22); a row of longer pd setulae amongst which 2 strong setae are visible; ad surface with a row of setae of varying lengths; apical $\frac{2}{3}$ of tibia on a through v to pv surfaces covered with short fine erect setae, mostly equal to tibial depth, those on a surface the longest and twice tibial depth. Hind metatarsus without any short basal ventral setae.

Wings.—Weakly smoky, more conspicuously so towards base. Veins bare except for costa. Costal spine inconspicuous, hardly distinct from the spinules; one row of these spinules rather strong and erect, much longer than costal width. Cross-vein m-m straight. Squamae brown. Knob of halteres dark brown.

Abdomen.—Black in ground-colour, subshining, in posterior view dulled by thin brownish dust but without any dusted pattern. Setae quite long and erect laterally and posteriorly, but not particularly dense and none of them flattened. Sternites without any special setae, sternite 1 bare. Pregenital tergite with quite long dense setae. [Genitalia not examined.]

Measurements.—Length of body, 5.0mm. Length of wing, 4.0mm.

Holotype ♂, East Tibet: Poshö, 3000–4300m, 1.VII.–31.VIII.1936 (R. J. H. Kaulback), in BMNH.

The male of *P. altica* may be immediately distinguished from all other described *Pogonomyia* by the broad frons (fig. 20).

Pogonomyia tysoni nov. spec. (Fig. 23)

Male

Head.—Frons narrow, at middle equal to just under twice diameter of anterior ocellus. Eyes bare, with only the usual microscopic pubescence. Parafrontalia thinly whitish pruinose when viewed from above, otherwise appearing matt; parafacialia silvery-white,

face yellowish-white, genae grey; upper occiput shining black, lower occiput thinly pruinose. Interfrontalia obliterated on median half of frons, visible only as a seam where parafacialia touch. 14-15 pairs of inclinate ori, the upper few more reclinate, reaching from lunula to anterior ocellus. 3rd antennal segment moderate, slightly longer than 2nd and $1\frac{1}{2}$ times as long as broad. Arista pubescent, the longest individual hairs slightly longer than basal diameter of arista, and the combined pubescence equal to almost half width of 3rd antennal segment. Parafacialia moderate, opposite insertion of arista equal to width of 3rd antennal segment. Genae moderate, not quite as broad as length of 3rd antennal segment. Peristomal setae rather long and dense; several stout upcurved setae on anterior part of occipital dilation. Proboscis moderate, mentum thinly dusted.

Thorax.—Ground-colour black. Mesonotum with thin weak bluish-grey dust: before suture on humeri, along dc and along suture from dc outwards; after suture on a small area before scutellum, with two prongs extending slightly forwards medially to 2nd post dc. Scutellum matt or subshining. Pleura thinly bluish-grey dusted. Spiracles black. Setae and setulae normal, not flattened; ground-setulae quite long but sparse. Acr 0+1, the prst setulae in 2 rows. Dc 2+3. 2 h. 2 ph. 2 ia. Pra longer than 2nd npl. Prosternum, propleural depression, pteropleuron, hypopleuron, and scutellum on sides and below bare. No auxiliary prostigmatal seta. Mesopleuron with 1-2 setulae in upper anterior corner. Disc of notopleuron with several setulae, the longest of which are half or just over half of 2nd npl. Stpl 1+1, the anterior seta very fine, 1-2 stronger fine setulae below the posterior seta. Scutellum with strong sub-basal lateral and apical setae; the disc with only a few setulae at sides and before tip.

Legs.—Black. Tarsi without modifications; inner and outer claws subequal, those on fore leg shorter than those on the other two pairs. Coxae and trochanters without modifications, fore coxa with some fine curled hairs at tip behind. Fore femur without av setae. Fore tibia with 2 pv setae in apical half; with ad, d, 1 pv and 2 short av preapical setae. Fore metatarsus with a basal ventral seta. Mid femur straight; av and pv surfaces with complete rows of quite long fine setae, the longest of which, in basal half, are twice femoral depth. Mid tibia with 0-1 ad, a row of 5 pd with a few short additional setulae, 0 av and 2 pv. Hind femur with a complete row of av setae, those on basal third fine and dense; v to pv surfaces also with similar fine dense setae in basal third, pv surface otherwise bare. Hind tibia straight, with a short but conspicuous apical ventral projection (fig. 23), on which is situated 1 short av apical seta; pd surface with a row of 4-5 setae; ad to a surfaces with several rows of upright setae on most of length, with about 4 outstanding ad setae among them; 2 av setae, and a few short fine pv on median third; without a pv apical. Hind metatarsus with 2 short basal ventral setae.

Wings.—Weakly smoky, strongly darkened at base. Veins bare except for costa. Costal spine inconspicuous, hardly distinct from the costal spinules; spinules all short. Cross-vein m-m upright, slightly curved. Squamae creamy to yellowish, the margins yellow or creamy. Knob of halteres black.

Abdomen.—Black in ground-colour. In posterior view with dense yellowish-grey dust which in extreme posterior view leaves most of tergite 1+2 and a median vitta on tergites 3-5 undusted, and tergites 3-5 thinly dusted on rather broad hind-margins. Setae quite long and erect laterally and posteriorly, but none of them flattened. Sternites without any special setae, sternite 1 bare. Pregenital tergite with quite long setae. [Genitalia not examined.]

Measurements.—Length of body, 4.5-5.0 mm. Length of wing, 3.5-4.0 mm.

Female not known.

Holotype ♂, West Nepal: Baitadi, Tinkar Khola, 4300 m, 3.VII.1953 (J. B. Tyson), in BMNH.

Paratypes, 2♂. West Nepal: Baitadi, Tinkar Khola, 4300 m, 3.VII.1953 (J. B. Tyson), 2♂, in BMNH.

P. tysoni is very similar to the male of the European *P. brumalis* Rondani, from which it differs by the narrow frons, full rows of av and pv setae on mid femur, setae on hind femur, and mainly dusted abdomen.

Pogonomyia tibetana Schnabl

Pogonomyia tibetana Schnabl, in SCHNABL and DZIEDZICKI, 1911: 299 (247). Syntypes, 5♂, Tibet: Nerekta. Destroyed with SCHNABL'S collection (HENNIG, 1962: 685).

A single female has been seen that agrees in virtually all characters with typical Alpine *P. alpicola* Rondani. It differs by having narrower parafacialia and less projecting epistoma; costal spine very long, much longer than cross-vein r-m; borders of squamae creamy-white; size much smaller, wing-length 5.5 mm. (6.5 mm. or more in *P. alpicola*). This may be the female of *P. tibetana* Schnabl, a species not recognised with certainty since SCHNABL'S description, the types of which are lost. HENNIG (1962: 685) studied some male *Pogonomyia* from Tibet of which one was *P. alpicola* and two were a closely related species that he hesitantly identified as *P. tibetana*. He also studied 3 females that appeared to be indistinguishable from the female of *P. alpicola*. It is probable that my female is *P. tibetana*, or at least conspecific with *P. tibetana* sensu HENNIG.

East Tibet: Poshö, 3000-4300 m, 1.VII.-31.VIII.1936 (R. J. H. Kaulback), 1♀, in BMNH.

Pogonomyia fumipennis Malloch (Figs. 24-25)

Pogonomyia fumipennis Malloch, 1921: 235. Holotype ♂, India, Kashmir: Gulmarg. In BMNH.

Male

Head.—Frons narrow, at middle equal to twice diameter of anterior ocellus. Eyes bare, with only the usual microscopic pubescence. Parafrontalia matt brown pruinose above; lower third and parafacialia silvery-white when viewed from above, but otherwise appearing matt; face brownish; genae matt brownish-grey; upper occiput shining black, lower occiput thinly pruinose. Interfrontalia distinct throughout, at middle narrower than a parafrontale. 13-15 pairs of inclinate ori, the upper ones more reclinate, reaching from lunula to anterior ocellus. 13-15 pairs of inclinate ori, the upper ones more reclinate, reaching from lunula to anterior ocellus. 3rd antennal segment, moderate, 1½ times as long as 2nd and twice as long as broad. Arista short plumose, the longest combined plumosity equal to width of 3rd antennal segment. Parafacialia moderate, opposite insertion

of arista equal to width of 3rd antennal segment. Genae moderate, almost as broad as length of 3rd antennal segment. Peristomal setae rather long and dense; several strong up-curved setae on anterior part of occipital dilation. Proboscis quite short, mentum thinly dusted.

Thorax.—Ground-colour black, mesonotum appearing subshining or matt according to the point-of-view but without any definite dusted pattern except for the brownish-grey dusted humeri. Scutellum matt or subshining. Pleura subshining or thinly brownish-grey dusted. Spiracles black. Setae and setulae normal, not flattened; groundsetulae quite short and sparse. Acr 0+1, the prst setulae in 2 rows. Dc 2+3. 2h. 2ph. 2ia. Pra longer than 2nd npl. Prosternum, propleural depression, pteropleuron, hypopleuron, and scutellum on sides and below bare. No auxiliary prostigmatal seta. Mesopleuron without a setula in upper anterior corner. Disc of notopleuron with a few setulae, the longest of which are only $\frac{1}{3}$ length of 2nd seta. Stpl 1+2, sometimes with a stronger setula below or between the posterior two setae. Scutellum with strong sub-basal lateral and apical setae, the disc setulose only at sides, with a broad bare medio-basal patch.

Legs.—Black. Tarsi without modifications, except for fore metatarsus; inner and outer claws subequal, those on fore leg subequal to those on the other two pairs. Coxae and trochanters without modifications. Fore femur without av setae. Fore tibia with 2-3 pv setae in apical half; with ad, d, 1 pv and 1 av preapical setae. Fore metatarsus with a basal ventral seta, and drawn out at tip into a small apical ventral spine (fig. 24). Mid femur straight; av surface with a row of rather long strong setae on all but apical fifth, longer than femoral depth, and with rows of shorter setae above them on av to a surface on just over basal half; pv surface with a row of long fine setae on all but apical fifth, also longer than femoral depth; in basal third with long ventral setulae between the av and pv rows. Mid tibia with 0 ad, 3-4 pd, 0 av and 3-4 pv setae. Hind femur with a complete row of av setae, fine in basal half but all longer than femoral depth; pv surface with a row of short fine setae on basal half, the longest ones near base and only a little longer than femoral depth; basal third with rows of setulae between av and pv surfaces. Hind tibia straight, with a short but conspicuous apical ventral projection (fig. 25) on which is situated 1 short av apical seta; pd surface without a calcar in the usual position, but with a row of pd setulae and 2-3 strong setae on middle third of tibia; ad surface with a row of short setae, decreasing in length from base of tibia to tip, without any outstanding setae; av surface with a row of short setae on most of surface, the row duplicated around middle; about 3 short fine pv hairs in apical half; 1 pv apical. Hind metatarsus with 2 short basal ventral setae.

Wings.—Smoky and very strongly darkened in basal half. Veins bare except for costa. Costal spine inconspicuous, hardly distinct from the costal spinules; spinules all short. Cross-vein m-m upright and almost straight. Squamae white, margins white or creamy. Knob of halteres black.

Abdomen.—Black in ground-colour. In posterior view, thinly brownish-grey dusted on disc but more densely and conspicuously so at sides, and sometimes with faint indications of an undusted median line in extreme posterior view. Setae quite long and erect laterally and posteriorly, but none of them flattened. Sternites 2-4 with the setae quite long, dense and erect; sternite 1 setulose. Pregenital tergite with quite long setae. [Genitalia not examined.]

Measurements.—Length of body, 6.5-7.0mm. Length of wing, 5.5-6.0mm.

Female not known.

India, Kashmir: Gulmarg, 2800m, summer 1913 (F. W. Thomson), ♂ holotype and 2♂ paratypes, in BMNH.

These three specimens are not in good condition, and a full description could not be made from any one of them.

The two females tentatively referred to this species by EMDEN (1965: 289) certainly do not belong to it. See the discussion under the following species.

Because of the plumose arista, *P. fumipennis* resembles the Asiatic *P. stackelbergi* Lavciev which has very long fore claws, a complete row of pv setae on hind femur, and a strong subapical pv seta on mid femur.

Pogonomyia sp. B

Two females were discussed under *P. fumipennis* Malloch by EMDEN (1965: 289) who wrote "whether they belong to this or a different species of males cannot be ascertained at present, though the latter is perhaps more probable". I have seen no further material, but I am certain that these represent a distinct species. In addition to obvious sexual differences, these females differ from the male of *P. fumipennis* by the following characters: arista shorter-haired, the longest combined pubescence only half width of 3rd antennal segment; notopleuron without setulae; wings and wing-bases hardly darkened; mid tibia with 1-2 ad and 1 pv seta.

Zusammenfassung

Revision der Arten der Gattung *Pogonomyia* aus dem Himalaya. 7 der 11 bearbeiteten Arten sind neu:

P. lamellarsis (Nepal), *P. magnifica* (Tibet), *P. beelzebub* (Nepal, Tibet, Kashmir, Ostpunjab, Sikkim), *P. atrifrontata* (Nepal), *P. nigrifrons* (Nepal), *P. altica* (Tibet) und *P. tysoni* (Nepal). —

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Author's Address:

Mr. Adrian C. Pont, Department of Entomology,
British Museum (Natural History),
Cromwell Road, London S. W. 7, England.

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